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Phosphor Viewer PHIR 209

PS - 187/64
5 June 1964

MEMORANDUM TO: Assistant for Plans and Development

X1 ATTENTION : [redacted]

FROM : Chief, CIA/PID (NPIC)

SUBJECT : Evaluation of Prototype Equipment

1. The prototype device produced by [redacted] for enhancement of imagery on transparencies has been evaluated by members of the PID Production Staff. The device was demonstrated to a number of analysts but was felt to be not sufficiently developed to permit a full-scale operational evaluation by working analysts. 25X

2. The following comments are offered for your consideration:

a. Virtually no enhancement was observed with the device in its standard configuration.

b. A limited degree of contrast increase was obtained by removing the glass cover plate and reversing the phosphor plate so that the phosphor coating was facing upwards. The film was placed directly on this phosphor and viewed through the box containing the ultra-violet lamps. Contrast enhancement was limited to those large areas of low density on the transparency due to the placement of the ultra-violet lamps on the sides of the box. An angle of approximately 45 degrees caused the light to undercut the imagery in small areas of low density and yielded no appreciable enhancement.

c. The degree of enhancement obtained was also limited by the relative intensities of the front and back illumination. The ultra-violet lights did not deliver enough illumination when compared with the lowest possible back lighting. This was improved somewhat by removing all but one of the flourescent tubes in the rear but the ratio was still disproportionate.

3. Despite the shortcomings of the prototype, there appears to be some merit in this approach which may be determined by a further refinement of the equipment. The following suggestions are made for an improved model:

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a. Investigate the procurement of a smooth phosphor coating so that the effect mentioned in 2b may be improved. The film must contact the phosphor directly to prevent undercutting.

b. Increase the output of the ultra-violet sources and direct them so that the light is perpendicular to the film plane. This may be done by a beam-splitter arrangement such as the [redacted] vertical illuminator. 25X1

c. Provide back illumination with a more variable range allowing full extinction. This may require the use of other than flourescent sources.

d. If a beam-splitter arrangement is used for the UV source, the total area of the viewer may be decreased so that it offers sufficient field for a microscope. The majority of viewing requiring the enhancement technique is of this magnification and a viewer tailored to this size would be more useful than a larger format device.

4. PID is interested in seeing further work done on this technique and in discussing alternate approaches to solving the above problems with P&DS personnel.

[redacted] 25X1

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